ODS SURVEY UPDATE
411TH BSB HEIDELBERG

Contract
USAREUR wide Ozone Depleting Substances (ODS) Survey Update
Regional Contracting Office Seckenheim
DABN03-03-D-0001, DO 0002
BH Project 06300-02
OCTOBER 2004

BUCHART HORN GmbH / IMA-Europe

EXECUTIVE SUMMARY

This report concerns the identification and elimination of Ozone Depleting Substances (ODS) within the facilities of the 411th BSB Heidelberg.

Although the Installation Commander holds final responsibility for the installation to eliminate their dependency on the commercial availability of Ozone Depleting Substances (ODS), the day-to-day responsibility rests with the members and Chair of the ODS Elimination Team. The ODS Team has been formed and includes eight members. Its mission and objectives have been established and the ODS Team is committed to eliminate the 411th BSB's dependence on commercial availability of ODS I by the end of FY03 and all ODS by 2015.

For the 411th BSB to achieve this goal, it must have an inventory of all ODS around the community. ODS are in non-compliance with the Final Governing Standards (FGS) regulations, European regulations, and German regulations (see Chapter 4).

ODS include halons, chlorofluorocarbons (CFCs), hydro-chlorofluorocarbons (HCFCs) and certain solvents.

Halons and CFC have a high Ozone Depleting Potential (ODP) and are therefore classified ODS I; HCFC have a lower ODP, they are therefore classified ODS II.

Buchart-Horn has surveyed all installations for ODS and developed a database for ODS containing equipment. The 411th BSB was surveyed during January 2004. Equipment with ODS was surveyed, recorded, photographed and tagged.

Army DPW, AAFES, DECA, DoDDS, Medical facilities and MWR facilities were surveyed. Army DPW, AAFES, Medical Facilities and DECA each have their own programs for managing their ODS equipment. ODS containing equipment of DoDDS and MWR is serviced by DPW. Data about ODS containing equipment at AAFES, DECA, DoDDS, Medical facilities and MWR facilities is provided as a courtesy in the appendices of this report.

Due to the scope of the project, all hermetically sealed equipment such as home refrigerators, and window air conditioners were excluded from the inventory. Equipment containing less than 1 kg of refrigerant was also excluded from the survey based on German Law. Due to its small size, this equipment cannot be "topped-off", but has to be replaced if it fails. Nevertheless, some of this equipment was included in the database during the survey. GSA vehicles are also not included in this survey. Also excluded from the scope were weapons systems, tactical vehicles and temporary installations.

Detailed information about all equipment surveyed can be extracted from the database, provided with this report.

Survey Results:

Army Facilities – BSB DPW:

Content	Pieces of Equipment	Charge in Kg	Required Activity	Associated Cost Min	Max
ODS I	16	45.3	Upgrade / Replace	drop-in[1)] €11,000	replace[2)] €94,000
Unknown ODS	None	N/A	Further Investigation needed (Identify Refrigerant)	N/A	N/A
ODS II	155	1113.1	No immediate activity required (Action required after 2015)	€0	€0
Non-ODS	41	550.7	No activity required	€0	€0
Total	212	1709.1	N/A	€11,000	€94,000

AAFES Facilities:

Content	Pieces of Equipment	Charge in Kg	Required Activity	Associated Cost Min	Max
ODS I	12	17.5	Upgrade / Replace	drop-in[1)] €8,000	replace[2)] €74,000
Unknown ODS	None	N/A	Further Investigation needed (Identify Refrigerant)	N/A	N/A
ODS II	73	210.6	No immediate activity required (Action required after 2015)	€0	€0
Non-ODS	6	36.5	No activity required	€0	€0
Total	91	264.6	N/A	€8,000	€74,000

DECA Facilities:

Content	Pieces of Equipment	Charge in Kg	Required Activity	Associated Cost Min	Max
ODS I	None	N/A	Upgrade / Replace	drop-in[1)] N/A	replace[2)] N/A
Unknown ODS	None	N/A	Further Investigation needed (Identify Refrigerant)	N/A	N/A
ODS II	None	N/A	No immediate activity required (Action required after 2015)	N/A	N/A
Non-ODS	7	1800.0	No activity required	€0	€0
Total	7	1800.0	N/A	€0	€0

[1)] "drop-in" is the minimum solution required for compliance and means replacing an existing refrigerant with an alternative refrigerant without replacing any significant hardware

[2)] "replace" is the maximum solution required for compliance and refers to the replacement of the entire refrigeration system; to include compressor, condenser and refrigerant.

DoDDS Facilities:

Content	Pieces of Equipment	Charge in Kg	Required Activity	Associated Cost Min	Max
ODS I	2	3.5	Upgrade / Replace	drop-in[1)] €1,400	replace[2)] €13,000
Unknown ODS	None	N/A	Further Investigation needed (Identify Refrigerant)	N/A	N/A
ODS II	2	5.6	No immediate activity required (Action required after 2015)	€0	€0
Non-ODS	None	N/A	No activity required	N/A	N/A
Total	4	9.1	N/A	€1,400	€13,000

MWR-Facilities:

Content	Pieces of Equipment	Charge in Kg	Required Activity	Associated Cost Min	Max
ODS I	4	4.3	Upgrade / Replace	drop-in[1)] €2,600	replace[2)] €20,000
Unknown ODS	None	N/A	Further Investigation needed (Identify Refrigerant)	N/A	N/A
ODS II	1	2.5	No immediate activity required (Action required after 2015)	€0	€0
Non-ODS	None	N/A	No activity required	N/A	N/A
Total	5	6.8	N/A	€2,600	€20,000

Medical-Facilities:

Content	Pieces of Equipment	Charge in Kg	Required Activity	Associated Cost Min	Max
ODS I	2	1.7	Upgrade / Replace	drop-in[1)] €1,400	replace[2)] €15,000
Unknown ODS	None	N/A	Further Investigation needed (Identify Refrigerant)	N/A	N/A
ODS II	42	344.0	No immediate activity required (Action required after 2015)	€0	€0
Non-ODS	None	N/A	No activity required	N/A	N/A
Total	44	345.7	N/A	€1,400	€15,000

[1)] "drop-in" is the minimum solution required for compliance and means replacing an existing refrigerant with an alternative refrigerant without replacing any significant hardware

[2)] "replace" is the maximum solution required for compliance and refers to the replacement of the entire refrigeration system; to include compressor, condenser and refrigerant.

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1.0 INSTALLATION

"Installation Commanders must eliminate their dependency on the commercial availability of ODS I's by end of FY03."
ACSIM ODEP ODS Policy Memorandum 7 January 2003

The 411th BSB Heidelberg is primarily located in Baden-Wuertemberg and partially in Rheinland-Pfalz (Germersheim Army Depot). The major activity conducted at this BSB is administrative. Housing, community support services and vehicle maintenance facilities are also located in the 411th BSB.

The following installation information is provided in this chapter:

- 1.1 List of Installation names, ARLOC numbers, locations and major uses,
- 1.2 List of Installation host and tenant organizations with point of contact

1.1 List of 411th BSB Installations

Installation Name	ARLOC	Location	Use(s)
Campbell Barracks	GE 12F	Heidelberg	Administration, Community Support
Patton Barracks	GE 658	Heidelberg	Administration, Community Support, Vehicle Maintenance
Army Airfield	GE 35B	Heidelberg	Fire Department, Administration
Hammonds Barracks	GE 33J	Seckenheim	Administration
Stem Kaserne	GE 76P	Seckenheim	Administration, AAFES Operations
Edingen Radio Relay Facility	GE 19P	Edingen	Radio Relay Facility
Koenigstuhl Radio Relay Station	GE 46F	Koenigstuhl	Radio Relay Station
Nachrichten Kaserne	GE 34G	Heidelberg	Medical Facilities, Community Support
Mark Twain Village	GE 52L	Heidelberg	Family Housing, Community Support, Administration
Community Support Center	GE 34J	Heidelberg	Community Support
AFN Relay Station	GE 34E	Heidelberg	Relay Station
Golf Course	GE 34F	Oftersheim	MWR
Small Arms Range	GE 62S	Oftersheim	Training
Tompkins Barracks	GE 846	Schwetzingen	Administration, Vehicle Maintenance, Community Support
Kilbourne Kaserne	GE 45D	Schwetzingen	Administration
Patrick Henry Village	GE 654	Heidelberg	Family Housing, Community Support
Germersheim Army Depot	GE 30J	Germersheim	Administration, Vehicle Maintenance, Community Support
Stocksberg Radio Relay Facility	GE 80B	Stocksberg	Radio Relay Facility

1.2 List of 411th BSB Organizations

Org. Name	Unit	APO	POC Name	Number
181ST SIG	Unit 29351	APO AE 09014	CPT Joyner	370-7344
1ST PERSCOM	Unit 29058	APO AE 09081	COL Finke	379-7662/7859
202D MP GP	Unit 29201	APO AE 09102	COL Taylor	375-2335/6859
208TH Finance BN	Unit 30041	APO AE 09166	CPT Endsley	384-6967/6905
214TH AVN CO	Unit 29231	APO AE 09102	LTC Lynch	373-8990/8009
266TH Finance Command	Unit 29001	APO AE 09007	COL Troller	379-5100
26TH ASG	Unit 29237	APO AE 09102	COL Rush	373-1300/1310
2ND PLT 510th Postal	Unit 29234	APO AE 09102	CPT McLean	380-6017
302 MI BN	Unit 26745	APO AE 09014	CPT Love	373-5067/5064
30TH MED BDE	Unit 29218	APO AE 09102	COL Fox	371-2828/2216
43D Signal BN	Unit 29227	APO AE 09014	LTC Naumchick	370-1440
4TH PLT, 249TH ENG DET	Unit 29351	APO AE 09014	CW2 Abrazado	379-7753
503D CHEM DET	Unit 29355	APO AE 09014	1LT Husman	370-5478
510TH Postal	Unit 29737	APO AE 09166	CPT McLean	385-3097
527TH MI BN	Unit 29058	APO AE 09081	CPT Quirk	347-3234
528TH MP	Unit 29237	APO AE 09102	CPT Wallus	373-8283
5TH MP DET	Unit 29355	APO AE 09014	CW2 Pierce	370-7541
64TH MED DET	CMR 442	APO AE 09042	CPT Bentzel	370-8338
66TH MI DET	Unit 29058	APO AE 09014	CPT Durst	370-7215
7TH ARCOM	Unit 29238	APO AE 09102	BG Patrick	379-6543
93D MED BN	CMR 442	APO AE 09042	COL Craemer	371-2642

1.2 List of 411th BSB Organizations - continued

Org. Name	Unit	APO	POC Name	Number
AFOD	Unit 29231	APO AE 09102	CW5 Irvine	373-6201
AMC-EUROPE	Unit 29311	APO AE 09266	COL Hafele	375-6068
Contracting Command	Unit 229331	APO AE 09266	COL Merkwan	375-8705
DDDE	CMR 425	APO AE 09095	LTC Curtis	378-3303
DET B, 510TH PSB	CMR 419	APO AE 09102	CPT Anthony	370-8000
HDENTAC	Unit 29225	APO AE 09102	COL Priddy	371-2038
HHC, 1ST PERSCOM	Unit 29058	APO AE 09081	CPT Hair	379-6215
HHC, 26th ASG	Unit 29237	APO AE 09102	CPT Mallory	373-6085/1610
HHC, 30TH MED BDE	Unit 29218	APO AE 09102	CPT Davis	371-2550
HHC, 7TH ARCOM	Unit 29238	APO AE 09102	MAJ Capece	379-6209
HHC, 93D Dental BN	CMR 442	APO AE 09042	CPT Andrada	371-2817/3255
HHC, DENTAC	Unit 29225	APO AE 09102	CPT Ryhn	371-2037
HHC, JHQ-CENTRE	Unit 29101	APO AE 09099	CPT Newbourne	374-5485
HHC, MEDDAC	Unit 29223	APO AE 09102	CPT Hower	371-2700/2763
HHC, USAREUR & 7TH Army	Unit 29245	APO AE 09102	MAJ Allaire	373-7112
HHC, V CORPS STB	Unit 29335	APO AE 09194	CPT McMurray	373-6223/6208
HMEDDAC	Unit 29223	APO AE 09102	COL Saulsbery	371-2838
JHQ-CENTRE	Unit 29101	APO AE 09099	MAJ Martino	374-5520/5548
V CORPS STB	Unit 29335	APO AE 09194	LTC Dodge	373-6208/8056

2.0 TEAM

"Installation Commanders must eliminate their dependency on the commercial availability of ODS Is by end of FY03."
"Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations."
IMA Memorandum Richard A. Hoefert, Colonel, GS; Director, Environmental Program, DC 07 January 2003

The 411th BSB ODS Team consists of eight members, including the Chair. Team members include the DPW, representatives from the Environmental Division, Utilities, AAFES, PAE (Medical Facilities) and the ET & S Division. Members of the team will provide organizational expertise and a commitment to focus on phasing out ODS I within the 411th BSB in the near future.

The ODS Team should meet regularly to identify issues and actions, as well as determine individual responsibilities.

Although the Installation Commander holds final responsibility for the installations to eliminate their dependency on the commercial availability of ODS I by end of FY 03, the day-to-day responsibility rests with the members and Chair of the ODS Elimination Team.

The main goals for the ODS Team are:

- Education and implementation of ODS regulations and policy to the Army and civilian members of 411th BSB.
- To confirm that Army and civilians servicing the equipment with ODS refrigerant are following the FGS regulations regarding Ozone Depleting Substances.

The objectives are:

- Maintenance of ODS recovery and logistics procedures
- Development of ODS management practices (including the upkeep of the ODS plan)
- The identification of resources needed to execute the ODS phase out plan.

The following information is included in this chapter:

- 2.1 Installation Commander's Buy-in Statement
- 2.2 ODS Team Roster
- 2.3 ODS Team Mission Statement

2.1 Installation Commander's Buy-in Statement

DEPARTMENT OF THE ARMY
411th BASE SUPPORT BATTALION
UNIT 29245
APO AE 09102

AEUSG-HD-PW-ENV (200-1a) 28 JAN 2004

MEMORANDUM FOR SEE DISTRIBUTION

SUBJECT: Army Ozone Depleting Substances (ODS) Survey

1. Installation Management Activity - Europe Region (IMA-E) is initiating a USAREUR wide ASG/BSB ODS survey. I ask for your full support in this project. This tool will assist Commanders in complying with Department of Army (DA) policy to eliminate ODS from Army facilities and in complying with all environmental legal requirements.

2. As a result of actions taken by U.S. Congress and international parties to the Montreal Protocol (1987), ozone-depleting substances such as halons and chlorofluorocarbons are no longer produced or marketed. Congress through Public Law, the President by executive order and the Environmental Protection Agency by regulatory actions further limited the procurement and use of ODS throughout the United States and Department of Defense. In Europe, Environmental Final Governing Standards (FGS) currently restrict handling and prohibit the use of many kinds of ODS, and will prohibit most, if not all, ODS in the future. Although these actions pose a challenge to maintaining effective facilities, I strongly support them.

3. Some older air conditioning and refrigeration equipment and some older fire suppression systems in the 411th BSB still use ODS. Army policy requires installations to eliminate dependency on ODS and comply with the FGS requirements concerning the handling and use of ODS. The 411th BSB is working to eliminate ODS in our community.

4. Responsible and effective stewardship of Army facilities is the duty of all members of the force. I solicit your active support for and cooperation with the ODS survey team to ensure that we fully comply with DA policy. The ODS elimination program is a positive and proactive approach to environmental stewardship, and benefits us all.

Diane M Vanderpot
DIANE M. VANDERPOT
LTC, MI
Commanding

2.2 411th BSB Heidelberg ODS Elimination Team

Name	Unit	Function	DSN Number	Civilian Phone	E-mail Address (Provided if available)
Mr. Dan Welch Chief, DPW-EMO	DPW-EMO 411th BSB Heidelberg Building 3962, DPW Compound	Chair	387-3140	06221-4380-3140	daniel.welch@bsbdpw.heidelberg.army.mil
Mr. Johannes Haid	DPW-EMO 411th BSB Heidelberg Building 3962, DPW Compound	Tenant	387-3141	06221-4380-3141	johannes.haid@bsbdpw.heidelberg.army.mil
Mr. Wilfried Figge	DPW-O&M 411th BSB Heidelberg Building 3962, DPW Compound	Tenant	387-3190	06221-4380-3190	wilfried.figge@bsbdpw.heidelberg.army.mil
Mr. Bill Taylor	DPW 411th BSB Heidelberg Building 3962, DPW Compound	Tenant	387-3102	06221-4380-3102	bill.taylor@bsbdpw.heidelberg.army.mil
Mr. Rolf Stadler	DPW-O&M 411th BSB Heidelberg Building 3962, DPW Compound	Tenant	387-3192	06221-4380-3192	rolf.stadler@bsbdpw.heidelberg.army.mil
Mr. Jim Kirschenman	DPW-ET&S 411th BSB Heidelberg Building 3962, DPW Compound	Tenant	387-3120	06221-4380-3120	james.kirschenman@bsbdpw.heidelberg.army.mil
Mr. Rabe	AAFES 411th BSB Heidelberg Building 1014, Stem Kaserne	Tenant	N/A	0621-475076	rabed@aafes.com
Mr. Lee Fletcher	PAE Building 3613, Nachrichten Kaserne	Tenant	N/A	06221-172255	lee.fletcher@us.army.mil

2.3 411th BSB ODS Team Mission Statement

Mission:

Through responsible management of all ODS assets, facilities modification, energy efficiency programs, and environmental and real property OMA resources, 411th BSB Heidelberg will completely eliminate its dependency on ODS's.

Objectives:

Retrofit, replace, or otherwise retire all air conditioning and refrigeration equipment using chlorofluorocarbon (CFC) refrigerant that requires refilling.

Retrofit, replace, or otherwise retire all air conditioning and refrigeration equipment using chlorofluorocarbon (CFC) refrigerant when economically feasible and substitute refrigerant is available.

Recover all CFC refrigerants installed in retired air conditioning and refrigeration equipment and turn them in to the Army ODS Reserve.

Retrofit, replace, or otherwise retire all air conditioning and refrigeration equipment using HCFC refrigerant that requires refilling with HCFC refrigerant by the end of fiscal year 2015.

Educate and Assist the Army and civilians in the 411th BSB in understanding the need to achieve this mission and the steps required.

Minimize the impact on the operations and maintenance account of all ODS retrofits, replacements, or other conversions by using to the maximum extent possible resourcing options available through facilities' modernization and energy efficiency programs.

3.0 INVENTORY

"These responsibilities include the inventory of Installation owned equipment and facilities occupied by Army and non-Army tenant organizations."
ASA (IL&E) Memorandum 13 Feb 1996

The 411th BSB was surveyed for Ozone Depleting Substances (ODS) that include Halons (ODS I), Chlorofluorocarbons (CFC - ODS I), and Hydro-Chlorofluorocarbons (HCFC - ODS II).

ODS I - Halons are commonly found in fire suppression or fire extinguishing systems and can be identified as Halon-1202, 1211, 1301, or 2402 (see Table 4-1).
ODS I - CFCs are utilized in refrigeration and air conditioning systems and are identified by a variety of numbers (see Table 4-1).
ODS II - HCFCs are utilized in refrigeration and air conditioning systems and are identified by a variety of numbers (see Table 4-1).
ODS unknown refers to pieces of equipment with no information available about the refrigerant.
Non-ODS refers to equipment containing refrigerant not being harmful to ozone.

For detailed information about the surveyed parameters; see Appendix J, Field Forms.

Army DPW, AAFES, DoDDS, DECA, Medical and MWR owned ODS containing equipment was surveyed, recorded, photographed and tagged. Detailed information about Army DPW owned equipment is available at the end of this Chapter. AAFES, HMEDDAC and DECA each have their own programs for managing their ODS equipment. ODS containing equipment of DoDDS and MWR is serviced by DPW. Data about ODS containing equipment at AAFES, DoDDS, DECA, Medical and MWR facilities is provided as a courtesy in the appendices of this report.

Based on the project scope, all hermetically sealed equipment such as home refrigerators, and window air conditioners were excluded from the inventory. Equipment containing less than 1 kg of refrigerant was also excluded from the survey. Nevertheless, some of this equipment was included in the database during the survey. A complete inventory for all this equipment was not conducted within the 411th BSB. Due to the small size this equipment cannot be "topped-off", but has to be replaced as it breaks down. GSA vehicles are also not included in this survey. Also excluded from the scope, were weapon systems, tactical vehicles and temporary installations.

Detailed information about all equipment surveyed can be extracted from the database, provided together with this report.

Survey results overview - Army Facilities BSB DPW:

Content	Pieces of Equipment	Charge in Kg
ODS I	16	45.3
Unknown ODS	None	N/A
ODS II	155	1113.1
Non-ODS	41	550.7
Total	212	1709.1

3.1 ODS I

CFC refrigerant is referred to as ODS I. As specified in chapter 4 of this report, the handling of ODS I is prohibited. Equipment with CFC is considered in non-compliance at the moment it starts leaking (needs refill) or requires major repair. Two types of ODS I refrigerants (R12 and R502) were found in the equipment surveyed.

Halon is also referred to as ODS I. Halons are commonly found in fire suppression or fire extinguishing systems and can be identified as Halon-1202, 1211, 1301, or 2402. All Halon Fire Suppression Systems and Halon Fire Extinguishers were dismantled and disposed of in the 411th BSB. The Halon systems have been replaced by sprinklers, dry chemical systems, or hand-held fire extinguishers.

Results of the 2004 inventory regarding ODS I containing equipment are shown in Table 3.6.

Compared to the ODS I equipment survey performed in 2000, it was found that approx. 50% of the ODS I equipment identified at that time had been replaced or removed in the interim.

3.2 ODS II

HCFC refrigerant is referred to as ODS II. As specified in chapter 4 of this report, the handling of ODS II within existing equipment is currently not restricted. ODS II therefore is considered to be in compliance with FGS and German regulations. Restrictions for the use within existing equipment do not become effective prior to the year 2010. The ODS II refrigerants found in the equipment were R22, R401A and R409A. The results of the 2004 inventory regarding ODS II containing equipment are shown in Appendix B.

3.3 ODS unknown

If there are pieces of equipment for which there is no information about the refrigerant, and if no records are available from DPW or the servicing organization, the refrigerant is called ODS unknown. The equipment needs further research or testing to identify the refrigerant. During the 2004 Survey Inventory at the 411th BSB, all refrigerants were clearly identified. No ODS unknown was found within this BSB.

3.4 Non-ODS

Equipment containing non-ODS (e.g. R134A and R407C) is out of the scope of the plan because it is not affected by environmental legal restrictions. Nevertheless, as surveyors inventoried equipment, some equipment containing non-ODS was noted. However, a complete non-ODS inventory was not conducted for all the facilities at the 411th BSB.

The following information is also included in this chapter:

- 3.5: Fire Chief Statement
- 3.6: ODS I Containing Equipment at BSB facilities (w/o AAFES, DECA, DoDDS, Medical facilities, MWR)

3.5 Fire Chief Statement

AEUSG-HD-PW-FES (AR420-90) 05 Aug 2004

MEMORANDUM FOR 411TH BSB Heidelberg, DPW, EMO, ATTN: MR HAID

SUBJECT: Ozone Depleting Substances in Fire Protection System, 411th BSB

1. Due to the current knowledge, there are no Fire Protection Systems within the 411th BSB, Fire & Emergency Services Division that contain Ozone Depleting Substances in their extinguishing or propellant agents.

2. The point of contact is the undersigned at DSN 373-5297/5295/8400.

HARALD J. PREUSLER
Fire Inspector
411th BSB, DPW, Fire Department

CF: CC/SV: Thorsten Rutsch
C/Admin. Rudi A. Fleck
File

3.6 Table: ODS I containing Equipment

(only BSB DPW, w/o AAFES, DECA, DoDDS, Medical, MWR)

ODS ID NO	ARLOC	Installation	Bldg	Location	Equipment	Manu-facturer	Manufacturer / Serial No.	Condition	Charge (kg)	Refri-gerant	Year installed	Service Org.	Service POC
0026	GE12F	Campbell Barracks	1	dining room	Milk cooler	Silver King	SK3TMPNSF / 294545X	Fair	2	R 12	1985	HSG Techn. Service GmbH	Mr. Wogawa
0053	GE12F	Campbell Barracks	13	Exterior North West	A/C-Split-Unit	Unknown	Unknown	Fair	2.5	ass. R 12	1985	HSG Techn. Service GmbH	Mr. Wogawa
0054	GE12F	Campbell Barracks	13	Exterior North West	A/C-Split-Unit	Unknown	Unknown	Fair	2.5	ass. R 12	1985	HSG Techn. Service GmbH	Mr. Wogawa
0057	GE12F	Campbell Barracks	22	Exterior South	A/C-Unit	Trane	Unknown	Poor	5	ass. R 12	1988	HSG Techn. Service GmbH	Mr. Wogawa
0064	GE12F	Campbell Barracks	31 S	Exterior South	A/C-Split-Unit	Carrier	Unknown	Not Operational	2	R 12	1985	HSG Techn. Service GmbH	Mr. Wogawa
0273	GE34G	Heidelberg Hospital	3608	kitchen	2-Door-Refrigerator	Norlake	NR255 / 93300739	Good	1	R 12	1986	HSG Techn. Service GmbH	Mr. Wogawa
0274	GE34G	Heidelberg Hospital	3608	Bar	Cooler for drinks	Perlick	7264-230 / 64-85-E	Fair	0.5	R 12	1985	HSG Techn. Service GmbH	Mr. Wogawa
0275	GE34G	Heidelberg Hospital	3608	Exterior South	Walk-in freezer	Norlake	CLT28-1A3 / 9321864	Good	6	R 502	1986	HSG Techn. Service GmbH	Mr. Wogawa
0150	GE654	Patrick Henry Village	4507	kitchen	2-Door-Refrigerator	TRUE	T-49 / 836372	Fair	1.2	R 12	1985	HSG Techn. Service GmbH	Mr. Wogawa
0151	GE654	Patrick Henry Village	4507	Exterior	Walk-in refrigerator	Unknown	Unknown	Fair	3	ass. R 12	1985	HSG Techn. Service GmbH	Mr. Wogawa
0152	GE654	Patrick Henry Village	4507	kitchen Pub	4-Door-Refrigerator	Mc Call	1045 / M-35008	Fair	0.75	R 12	1985	HSG Techn. Service GmbH	Mr. Wogawa

3.6 Table: ODS I containing equipment

(only BSB DPW, w/o AAFES, DECA, DoDDS, Medical, MWR)

ODS ID NO	ARLOC	Installation	Bldg	Location	Equipment	Manu-facturer	Manufacturer / Serial No.	Condition	Charge (kg)	Refri-gerant	Year installed	Service Org.	Service POC
0121	GE658	Patton Barracks	141	Exterior North	Walk-in freezer	L 'Unite Hermetique	TAH4518AHP / unknown	Not Operational	3	R 12	1984	HSG Techn. Service GmbH	Mr. Wogawa
0142	GE658	Patton Barracks	107	Exterior	Walk-in refrigerator	Copeland	DLLB-301-EWL / 343425	Out of Service	5	R 12	1987	HSG Techn. Service GmbH	Mr. Wogawa
0308	GE846	Tompkins Barracks	4243	Exterior	Walk-in freezer	Copeland	CRAI-0150-TFD-273 / 99D64696H	Fair	3.5	R 502	2000	HSG Techn. Service GmbH	Mr. Wogawa
0309	GE846	Tompkins Barracks	4243	kitchen	6-Doo-Refrigerator	Jordon	SKT74SSA / S6140892E	Fair	3.3	R 12	1989	HSG Techn. Service GmbH	Mr. Wogawa
0312	GE846	Tompkins Barracks	4391	Exterior	Walk-in cooler	Tecumseh	AH2512KM / 8GS725942	Fair	4	R 12	1989	HSG Techn. Service GmbH	Mr. Wogawa

4.0 RULES AND REGULATIONS

"Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations."
ACSIM Memorandum 25 November 2002

"Article 53 of the NATO SOFA SA states that German Law applies within a DoD installation" Final Governing Standards for Germany Chapter 1 Section C1.1 – August 2002

"Any operation, maintenance, or shut-down procedures involving ODSs must not allow the substances to escape into the atmosphere and must conform to the state of the art practices, except for actual emergency use of fire extinguishers substances."
Final Governing Standards for Germany Chapter 2 Section 3.6.1 – August 2002

Article 4
"Control of the placing on the market and use of controlled substances
1. Subject to paragraphs 4 and 5, the placing on the market and the use of the following controlled substances shall be prohibited:
(a) chlorofluorocarbons;
(b) other fully halogenated chlorofluorocarbons;
(c) halons;
(d) carbon tetrachloride;
(e) 1,1,1-trichloroethane; and
(f) hydrobromofluorocarbons."
EC Regulation no. 2037/2000 Chapter II, Article 4 section 1.

In accordance with DoD Directive 6050.16, DoD Policy for Establishing and Implementing Environmental Standards at Overseas Installations, environmental programs are managed in accordance with the Final Governing Standards (FGS) developed by the DoD for its operations in that country. The FGS are developed by a process of comparing U.S. regulations (as found in the Overseas Environmental Baseline Guidance Document) to Host Nation regulations and selecting the criteria that is more protective of human health and the environment.

However, the Supplemental Agreement to the Status of Forces Agreement (SOFA) with Germany requires DoD to apply German law to their use of an installation (except on internal matters with no effect on others). Thus, German regulations concerning ODS were researched and are generally considered the compliance standard upon which this ODS Survey Update was prepared.

As a member state of the European Community German Laws are strongly influenced by the European Regulations. The EU-Regulation on Substances that deplete the Ozone Layer is legally

binding in Germany. Therefore standards set by the EU Regulation 2037/2000 are also considered the compliance standard for this report.

Regulations for the U.S. are not directly applicable to the 411th BSB. They are provided herein for informational purposes, though, since Army policy is that the intent of U.S. law respecting environmental protection on DoD installations overseas be followed. To the extent possible, however, Army and DoD standards remain a requirement for the U.S. Army operating overseas.

All of these requirements are summarized below. An evaluation of current compliance with these requirements is included where noted.

4.1 Final Governing Standards - Germany

The FGS for Germany were last updated in August 2002. In the current version of the FGS ozone depleting substances are discussed in Chapter 2 section C2.3.6. Their restrictions and prohibitions are detailed in this section. Table C2.T10 lists ozone depleting substances covered by the FGS (See table 4-1).

FGS defines eight groups of ozone depleting substances:

1) Chlorofluorocarbons
2) Other Fully Halogenated Chlorofluorocarbons
3) Halons
4) Carbon Tetrachloride
5) 1,1,1-trichloroethane
6) Methyl Bromide
7) Hydrobromofluorocarbons
8) Hydrochlorofluorocarbons

In reference to this report, the groups 1 to 7 are ODS I, group 8 consists of ODS II.

Reviewing the FGS results in the finding that it covers both German Law (FCKW Verbotsverordnung) and the European Law (EU-Regulation on Substances that deplete the Ozone Layer).

FGS C2.3.6.2 refers to certain chemical substances as restricted ODSs in Germany.
In table C2.T10, these are marked with an asterisk, "*" which indicate the ones restricted by the German Ordinance.

FGS C2.3.6.3 refers to a more general use prohibition for CFCs, halons, carbon tetrachloride, 1,1,1-trichloroethane, and hydrobromofluorocarbons, which are the substances (beside others) restricted by the EU Regulation.

Table 4-1: Table C2.T10 - Ozone Depleting Substances

Molecular Formula	Common Name	CAS Number	Chemical Name
Chlorofluorocarbons (CFCs)			
$CFCl_3$	CFC – 11	75-69-4	Trichlorofluoromethane *
CF_2Cl_2	CFC – 12	75-71-8	Dichlorodifluoromethane *
$C_2F_3Cl_3$	CFC – 113	76-13-1	Trichlorotrifluoroethane *
$C_2F_4Cl_2$	CFC – 114	76-14-2	Dichlorotetrafluoroethane *
C_2F_5Cl	CFC – 115	76-15-3	Chloropentafluoroethane *
Other Fully Halogenated Chlorofluorocarbons			
CF_3Cl	CFC – 13	75-72-9	Chlorotrifluoromethane *
C_2FCl_5	CFC – 111	354-56-3	Pentachlorofluoroethane
$C_2F_2Cl_4$	CFC – 112	76-12-0	Tetrachlorodifluoroethane *
C_3FCl_7	CFC – 211	422-78-6	Heptachlorofluoropropane
$C_3F_2Cl_6$	CFC – 212	3182-26-1	Hexachlorodifluoropropane
$C_3F_3Cl_5$	CFC – 213	2354 06 5	Pentachlorotrifluoropropane
$C_3F_4Cl_4$	CFC – 214	29255-31-0	Tetrachlorotetrafluoropropane
$C_3F_5Cl_3$	CFC – 215	4259-43-2	Trichloropentafluoropropane
$C_3F_6Cl_2$	CFC – 216	661-97-2	Dichlorohexafluoropropane
C_3F_7Cl	CFC – 217	422-86-6	Chloroheptafluoropropane
$CF_2Cl_2 \cdot C_2F_2H_4$	CFC – 500	56275-41-3	Dichlorodifluoromethane · Difluoroethane
$CHF_2Cl \cdot C_2F_5Cl$	CFC – 502	74-45-6 and 76-15-3	Chlorodifluoromethane · Chloropentafluoroethane
$CF_3 Cl \cdot CHF_3$	CFC – 503	75-72-9 and 75-46-7	Chlorotrifluoromethane · Trifluoromethane
Halons			
CF_2BrCl	Halon – 1211	353-59-3	Bromochlorodifluoromethane *
CF_3Br	Halon – 1301	75-63-8	Bromotrifluoromethane *
$C_2F_4Br_2$	Halon – 2402	124-73-2	Dibromotetrafluoroethane *
Carbon Tetrachloride			
CCl_4	Carbon Tetrachloride	56-23-5	Carbon Tetrachloride *
1,1,1-trichloroethane			
$C_2H_3Cl_3$	Methyl Chloroform	71-55-6	1,1,1-trichloroethane *
Methyl Bromide			
CH_3Br	Methyl Bromide	74-83-9	Methyl Bromide
Hydrobromofluorocarbons			
$CHFBr_2$	N/A	-	Dibromofluoromethane
CHF_2Br	HBFC-22B1	-	Bromodifluoromethane
CH_2FBr	N/A	-	Bromofluoromethane
C_2HFBr_4	N/A	-	Tetrabromofluoroethane
$C_2HF_2Br_3$	N/A	-	Tribromodifluoroethane
$C_2HF_3Br_2$	N/A	-	Dibromotrifluoroethane
C_2HF_4Br	N/A	-	Bromotetrafluoroethane
$C_2H_2FBr_3$	N/A	-	Tribromofluoroethane
$C_2H_2F_2Br_2$	N/A	-	Dibromodifluoroethane
$C_2H_2F_3Br$	N/A	-	Bromotrifluoroethane
$C_2H_3FBr_2$	N/A	-	Dibromofluoroethane
$C_2H_3F_2Br$	N/A	-	Bromodifluoroethane
C_2H_4FBr	N/A	-	Bromofluoroethane
C_3HFBr_6	N/A	-	Hexabromofluoropropane

Table 4-1: Table C2.T10 - Ozone Depleting Substances (continued)

Molecular Formula	Common Name	CAS Number	Chemical Name
$C_3HF_2Br_5$	N/A	-	Pentabromodifluoropropane
$C_3HF_3Br_4$	N/A	-	Tetrabromotrifluoropropane
$C_3HF_4Br_3$	N/A	-	Tribromotetrafluoropropane
$C_3HF_5Br_2$	N/A	-	Dibromopentafluoropropane
C_3HF_6Br	N/A	-	Bromohexafluoropropane
$C_3H_2FBr_5$	N/A	-	Pentabromofluoropropane
$C_3H_2F_2Br_4$	N/A	-	Tetrabromodifluoropropane
$C_3H_2F_3Br_3$	N/A	-	Tribromotrifluoropropane
$C_3H_2F_4Br_2$	N/A	-	Dibromotetrafluoropropane
$C_3H_2F_5Br$	N/A	-	Bromopentafluoropropane
$C_3H_3FBr_4$	N/A	-	Tetrabromofluoropropane
$C_3H_3F_2Br_3$	N/A	-	Tribromodifluoropropane
$C_3HF_3Br_2$	N/A	-	Dibromotrifluoropropane
$C_3H_3F_4Br$	N/A	-	Bromotetrafluoropropane
$C_3H_4FBr_3$	N/A	-	Tribromofluoropropane
$C_3H_4F_2Br_2$	N/A	-	Dibromodifluoropropane
$C_3H_4F_3Br$	N/A	-	Bromotrifluoropropane
$C_3H_5FBr_2$	N/A	-	Dibromofluoropropane
$C_3H_5F_2Br$	N/A	-	Bromodifluoropropane
C_3H_6FBr	N/A	-	Bromofluoropropane
Hydrochlorofluorocarbons (HCFCs)			
$CHFCl_2$	HCFC – 21	-	Dichlorofluoromethane
CHF_2Cl	HCFC – 22	-	Chlorodifluoromethane *
CH_2FCl	HCFC – 31	-	Chlorofluoromethane
C_2HFCl_4	HCFC – 121	-	Tetrachlorofluoroethane
$C_2HF_2Cl_3$	HCFC – 122	-	Trichlorodifluoroethane
$C_2HF_3Cl_2$	HCFC – 123	-	Dichlorotrifluoroethane
C_2HF_4Cl	HCFC – 124	-	Chlorotetrafluoroethane
$C_2H_2FCl_3$	HCFC – 131	-	Trichlorofluoroethane
$C_2H_2F_2Cl_2$	HCFC – 132	-	Dichlorodifluoroethane
$C_2H_2F_3Cl$	HCFC – 133	-	Chlorotrifluoroethane
$C_2H_3FCl_2$	HCFC – 141	-	Dichlorofluoroethane
CH_3CFCl_2	HCFC – 141b	-	1,1-dichloro-1-fluoroethane
$C_2H_3F_2Cl$	HCFC – 142	-	Chlorodifluoroethane
CH_3CF_2Cl	HCFC – 142b	-	1-chloro-1,1-difluoroethane
C_2H_4FCl	HCFC – 151	-	Chlorofluoroethane
C_3HFCl_6	HCFC – 221	-	Hexachlorofluoropropane
$C_3HF_2Cl_5$	HCFC – 222	-	Pentachlorodifluoropropane
$C_3HF_3Cl_4$	HCFC – 223	-	Tetrachlorotrifluoropropane
$C_3HF_4Cl_3$	HCFC – 224	-	Trichlorotetrafluoropropane
$C_3HF_5Cl_2$	HCFC – 225	-	Dichloropentafluoropropane
$CF_3CF_2CHCl_2$	HCFC – 225ca	-	1,1-dichloro-2,2,3,3,3-pentafluoropropane
CF_2ClCF_2CHClF	HCFC – 225cb	-	1,3-dichloro-1,2,2,3,3-pentafluoropropane
C_3HF_6Cl	HCFC – 226	-	Chlorohexafluoropropane
$C_3H_2FCl_5$	HCFC – 231	-	Pentachlorofluoropropane

Table 4-1: Table C2.T10 - Ozone Depleting Substances (continued)

Molecular Formula	Common Name	CAS Number	Chemical Name
$C_3H_2F_2Cl_4$	HCFC – 232	-	Tetrachlorodifluoropropane
$C_3H_2F_3Cl_3$	HCFC – 233	-	Trichlorotrifluoropropane
$C_3H_2F_4Cl_2$	HCFC – 234	-	Dichlorotetrafluoropropane
$C_3H_2F_5Cl$	HCFC – 235	-	Chloropentafluoropropane
$C_3H_3FCl_4$	HCFC – 241	-	Tetrachlorofluoropropane
$C_3H_3F_2Cl_3$	HCFC – 242	-	Trichlorodifluoropropane
$C_3H_3F_3Cl_2$	HCFC – 243	-	Dichlorotrifluoropropane
$C_3H_3F_4Cl$	HCFC – 244	-	Chlorotetrafluoropropane
$C_3H_4FCl_3$	HCFC – 251	-	Trichlorofluoropropane
$C_3H_4F_2Cl_2$	HCFC – 252	-	Dichlorodifluoropropane
$C_3H_4F_3Cl$	HCFC – 253	-	Chlorotrifluoropropane
$C_3H_5FCl_2$	HCFC – 261	-	Dichlorofluoropropane
$C_3H_5F_2Cl$	HCFC – 262	-	Chlorodifluoropropane
C_3H_6FCl	HCFC – 271	-	Chlorofluoropropane

* These ODSs are designated as restricted use ODSs in Germany.

These are the following facts in regard to Table 4-1:

General Restrictions on the use of ODS:

- FGS Section C2.3.6.1: Any operation, maintenance, or shut-down procedures involving ODSs must not allow the substances to escape into the atmosphere and must conform to the state of the art practices, except for actual emergency use of fire extinguishing substances. Fully trained persons having the appropriate equipment will perform such work.

- FGS Section C2.3.6.6: Dismantling or disposal of equipment with ODS shall be recovered for disposition according to DoD 4160.21-M, Defense Materiel Disposition Manual, Chapter 10/ DoD Ozone Depleting Substances Turn-In & Requisitioning Procedures. In Germany the recovery station for Army ODS is located at Germersheim (see Chapter 5).

Restrictions on the use of ODS I:

FGS Section C2.3.6.3: The distribution, or use (i.e. utilization in maintenance or servicing of products and equipment) of the following ODS is prohibited:
Chlorofluorocarbons (CFCs) other fully halogenated CFCs; Halons; Carbon Tetrachloride; 1,1,1 Trichloroethane; and Hydrobromofluorocarbons.
These substances are referred to as ODS I in this report. Running an existing system without maintenance (e.g. using a refrigerator) would not be classified as use.

General restrictions on the use of ODS II

- FGS Section C.2.3.6.4.3.4: The use of HCFC is prohibited in all refrigeration and air conditioning systems produced after 01 July 2002. This implies that the installation of new equipment containing HCFC is prohibited.

- FGS Section C2.3.6.4.3.5: As of January 1, 2010 the use of virgin HCFC shall be prohibited in the maintenance and servicing of existing refrigeration and air-conditioning equipment. An example of use would be the refilling of an existing system with refrigerant.

- FGS Section C2.3.6.4.3.6: As of 1 January 2015, the use of recycled HCFC shall be prohibited in the maintenance and servicing of existing refrigeration and air-conditioning equipment. An example of use would be the refilling of an existing system with refrigerant.

Notwithstanding the above, the management of CFCs and Halons, which are used in military aircraft or tactical vehicle systems, shall be accomplished in accordance with the appropriate DoD directive ASA(IE) ODC MEMO 13 FEB 96.

4.2 German and European Regulations

Production, trade, use and replacement of ODSs in Germany are regulated by the Regulation Banning CFC and Halon (FCKW-Halon-Verbots-Verordnung), dated 6 May 1991, and the corresponding European Regulation, the Council Regulation No. 2037/2000 of 29 June 2000 on Substances that Deplete the Ozone Layer.

4.2.1 FCKW-Halon-Verbots-Verordnung

The German Regulation refers to the same substances and products identified with an asterisk in Table 4-1, plus methyl bromide and hydrobromofluorocarbons. It generally prohibits the use of all CFCs (ODS I). There are specific requirements for operation, maintenance, and decommissioning of equipment with ODS. The requirements are:

- It is prohibited when operating, maintaining or decommissioning products containing refrigerants or fire extinguishing materials to let these substances evaporate into the atmosphere.
- For providers of listed substances it is mandatory to take these products back after decommissioning, or to guarantee the recovery of the substances via a third party.
- Maintenance and decommissioning of units containing refrigerants or fire extinguishing substances and recovery of these substances shall only be performed by skilled personal having the appropriate technical equipment.
- Records about type and quantities of recovered substances shall be written down and kept for at least three years, to be presented to the Authorities if desired.

Prohibitions on new units containing ODS are described below:

- On 1 January 1992, the use of listed chemicals in new units containing more than 5 kg of refrigerants, foamed materials, solvents, and fire extinguishing halons was prohibited.
- On 1 January 1995, the use of listed chemicals in new units containing less than 5 kg of refrigerants was prohibited.
- On 1 January 2000, the use of R22 in new units was prohibited.

According to the Regulation, maintenance and decommissioning of cooling units shall only be performed by skilled and trained personnel with the required technical equipment. However, there are no special procedures for approval of this type of work. Local authorities are typically satisfied if work is performed under the guidance of a skilled Klima- und Kälteanlagenbauer.

Recovered ODS must be properly disposed of in accordance with the German Recycling Economy/Waste Law (Kreislaufwirtschafts-/Abfallgesetz), however, ODS from US Installations will be accomplished according to FGS. For example recovered R12 must be destroyed. In general, this consists of thermal cracking through incineration. Written records regarding collection and disposal of listed refrigerants must be kept by the disposal firm for three years.

4.2.2 European Council Regulation No. 2037/2000

The European Regulation on Substances that deplete the Ozone Layer (Regulation EC No 2037/2000) provides the legal frame work for ODS phase out within the member countries of the European Community. The Regulation 2037/2000 was published in the Official Journal L244 of 29 AUGUST 2000 and became effective for Germany on October 1, 2000.

This regulation addresses eight groups of controlled substances, for which differing degrees of restrictions are proclaimed. The eight groups of chemicals are:

I., II. Chlorofluorocarbons
III. Halons
IV. Carbon tetrachloride
V. 1,1,1-trichloroethane
VI. Methyl bromide
VII. Hydrobromofluorocarbons
VIII. Hydrochlorofluorocarbons

The substances of:
Groups I to VII are ODS I
Group VIII consists of 38 HCFC, which include all the ODS II of the FGS.

In general, the EU regulation is more stringent than the German FCKW-Halon Verbotsverordnung. Since EU regulations are adopted by Germany they are pertinent to this report and to the U.S. Army.

ODS I - CFC

- The use of ODS I as refrigerant in new equipment has been prohibited in Germany since the mid-1990s.

- For existing equipment Article 4, paragraph 4(iii) states that the use of ODS I (Groups I-VI) is prohibited since 01 January 2001 for the maintenance and servicing of refrigeration and air-conditioning equipment. Every refill of existing refrigeration or air conditioning equipment with ODS 1 is illegal.

- Article 4, paragraph 1, states that, the use of ODS (Groups I-VI) for military purposes will be temporarily allowed until 31 December 2008. This will apply to existing military applications where it is demonstrated that for a particular use, technically and economically feasible alternative substances or technologies are not available or cannot be used. This temporary exemption may be granted if requested by the Authorities of an EU member country. Also Annex VII of the Regulation states various scenarios ("critical use") in which the use of Halons 1301 and 1211 is accepted.

ODS II - HCFC

A step-by-step time frame is given in Article 5, paragraph 1(c)(i-v) for the phase-out of hydrochlorofluorocarbons (HCFCs), Group VIII (e.g., R22). This time frame is described below:

- Article 5, paragraph 1(c)(iv): The use of HCFC is prohibited as refrigerants in all refrigeration and air-conditioning equipment produced after 31 December 2000 except for: fixed air-conditioning equipment, with a cooling capacity of less than 100kW
- Article 5, paragraph 1(c)(iv): The use of HCFC will be prohibited from 1 January 2004 in all equipment produced after 31 December 2003.
- Article 5, paragraph 1(c)(v): The use of virgin HCFC will be prohibited in the maintenance and servicing of any refrigeration and air-conditioning equipment after 1 January 2010.
- Article 5, paragraph 1(c)(v): The use of any virgin or recycled HCFC will be prohibited after 1 January 2015.

Equipment containing ODS II (HCFC) has not been produced in Germany since the year 2000. It is not permitted to import equipment containing ODS II from other countries.

4.3 Army ODS Policy

Current Army policy on ODS elimination in their facilities is described in two documents the ACSIM policy memo of 25 November 2002, "Change in Army Policy for Elimination of Ozone Depleting Chemicals" and the "Green Book" – "Guide to Preparing Ozone-Depleting Chemical Elimination Plans for Installations" 14 January 1999.
The key points found within these two documents are listed below:

- Installation Commanders are responsible for ODS elimination.
- Tenant Commanders are responsible for complying with host ODS policies and supporting host ODS elimination efforts.
- Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations.
- Dependency on the commercial availability of ODS I shall be eliminated by end of FY03.
- Installations may not contract for the use of CFC
- All ODS installed in Army facilities must be recovered and turned into the Army ODS Reserve.
- ODS Alternatives must be first approved by the EPA Significant New Alternatives Policy (SNAP) Program and must receive toxicity clearance from the Army Surgeon General before being used in Army Facilities.

4.4 U.S. Regulations

As stated above, the U.S. regulations are presented for information purposes only. Army and DoD policies noted at the end of this section, however, should be applied to the greatest extent possible.

4.4.1 Title VI Clean Air Act

Title VI of the Clean Air Act contains a number of rulings on the operation and maintenance of facility air conditioning and refrigeration equipment. Included in these rulings are the following requirements:

- CAA Section 604: EPA Phase-out schedule of CFC same as EU regulations- allowance to limit import and production.
- CAA Section 606: EPA can accelerating schedule of phase out of CFC and HCFC if certain issues occur.
- CAA Section 608: No venting of any refrigerant or halon during the service, maintenance, repair, or disposal of air conditioning, refrigeration, and fire suppression equipment.
- CAA Section 608: All technicians who service air conditioning and refrigeration equipment must be EPA certified. Some sales restrictions.
- CAA Section 608: Only EPA-certified technicians may purchase CFCs.
- CAA Section 608: Only EPA-approved recovery/recycling equipment may be used, and any operation using such equipment must be EPA certified.
- CAA Section 608: Substantial leaks in air conditioning and refrigeration equipment with a charge of 50 pounds (23 Kg) or more must be repaired.

- CAA Section 612: SNAP established a process for continuing review of substitutes to determine acceptability and provides a petition to add and delete substances from published list.

No military or tenant personnel have been identified as providing maintenance support for this equipment. No military technicians are therefore liable to the training and certification requirements of Section 608 of the Clean Air Act.

4.4.2 Clean Air Act – Federal Register Notices from August 21, 2003

Through the EPA SNAP program, the EPA can review and classify potential ODS alternatives. The last notice accordingly has been sent out on August 21, 2003. FRL-7547-2 "Protection of Stratospheric Ozone: Notice 18 for Significant New Alternatives Policy Program (SNAP)" which has an expanded list of acceptable substitutes for ozone depleting substances (ODS).

Several alternative refrigerants were identified at the 411th BSB during the ODS survey. The most common were R407C and R143A, which have received EPA SNAP approval. The most current SNAP information can be found at http://www.epa.gov/ozone/title6/index.html. As of August 2000, the alternative refrigerants R134A and R407C have received toxicity clearance from the Army Surgeon General. The most current information for Army toxicity clearances can be found at http://chppm-www.apgea.army.mil.

4.4.3 Public Law 102-484 – Section 326

This is the Defence Authorization Act for FY 1993, in which DoD is prohibited from awarding any contract after June 1993 that requires the use of a ODS I. This applies to purchase of equipment, as well as service contracts.

If there is no suitable substitute available for the ODS, however, such contracts may be awarded with signed approval from a General Officer or Senior Executive Service (SES). All DoD approvals are annually compiled by each Service and submitted to Congress. Such approval is not required if previously recovered CFCs are being used, even those provided to the servicing contractor as government furnished equipment (GFE). The 411th BSB has not submitted any Senior Approval Official documents.

5.0 RECOVERY AND TURN-IN

"All CFC refrigerants in serviced equipment must be recovered before the equipment is retired. It is needed for the continued operation of CFC equipment on your installation. If in excess to your requirements, it is needed by the Army ODS Reserve."
ACSIM Memorandum 3 July 1997

"Installation Commanders must eliminate their dependency on the commercial availability of Class 1 ODS by end of FY03"
ACSIM Memorandum 7 January 2003

The primary turn-in site for the DoD ODS Reserve is located at DDRV in Richmond, Va. USAREUR policy requires that recovered ODS I CFCs be shipped to the Army ODS Reserve in Germersheim. This site has been available since 1997. In the future, all recovered ODS I CFCs will be shipped to the ODS Reserve and a record of ODS recovery will be kept in Table 5-1. Since the recovered CFCs will remain within Army ownership, the shipment of recovered CFCs to the ODS Reserve will not be in violation of host nation laws.

The DoD ODS Reserve is managed by Defense Logistics Agency (DLA) through the Defense Supply Center, Richmond (DSCR) and includes an OCONUS collection point at Defense Distribution Depot Europe (DDDE)-Germersheim, Germany. No authorization is required to turn ODSs into the Army ODS Reserve. Government recovery cylinders are available free of charge through DSCR. DSCR will also cover turn-in shipping costs that exceed $250 by forwarding a MIPR to the shipping unit. All containers must be packaged, labeled and transported in compliance with all applicable requirements. Details of the DoD ODS turn-in procedures are provided in the Appendix A.

Maintaining the ODS I recovery record is the responsibility of the BSB Environmental Management Office according to Installation Management Agency – Europe.

Further information can be taken from

https://www.denix.osd.mil/denix/Public/News/DLA/ODS/sect2.html

- 5-1 Table ODS I Recovery Record

5.1 Table: ODS I Recovery Record

ODS	From Bldg	Container NSN	Container Size	No. Containers	Total Kg	Excess Yes/No	Storage Location	Storage POC	Kg Left	Recovery Date	Transfer Document No.

6.0 MANAGEMENT

"Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations."
ACSIM ODEP ODS Policy Memorandum 07 January 2003

"General Use Prohibition. The distribution or use (i.e., utilization in maintenance or servicing of products and equipment) of the following ODS is prohibited. Running an existing system without maintenance (e.g., using a refrigerator) would not be classified as use.

Chlorofluorocarbons (CFCs);
Other fully halogenated CFCs;
Halons (except as specified in C2.3.6.3.1);
Carbon tetrachloride;
1,1,1-trichloroethane; and
Hydrobromofluorocarbons."

FGS for Germany August 2002 Chapter 2 section 3.6.3

"Control of the placing on the market and use of controlled substances:
1. Subject to paragraphs 4 and 5, the placing on the market and the use of the following controlled substances shall be prohibited:
(a) chlorofluorocarbons;
(b) other fully halogenated chlorofluorocarbons;
(c) halons;
(d) carbon tetrachloride;
(e) 1,1,1-trichloroethane; and
(f) hydrobromofluorocarbons."
EU Regulation 2037/2000 29 June 2000 Chapter 2 Article 4

Proper planning is the key to:
1. Phasing out all ODS I from the BSB in the near future
2. Phasing out ODS II by the target date of 2015

The 411th BSB has already successfully eliminated all installed halon from the installation. It can therefore focus its attention on the elimination of CFCs.

Starting in FY 2004, the ODS Elimination Team will routinely compile project information yearly on all refrigeration equipment with R12 or R502 refrigerant. The tables in Section 6 will be updated to reflect the changing status of the equipment. A report detailing this information will be presented to the 26th ASG.

6.1 ODS I Elimination

6.1.1 Decision Matrix

The assessment of the surveyed equipment could result in the recommendation:
- No Activity Required
- Upgrade
- Replace
- Replace when fails
- Remove
- Further Investigation

The corresponding Decision Matrix and guideline is shown in Appendix J, Field Forms.

6.1.2 Project Prioritization

A ranking system was developed to provide data for prioritization of projects.
The prioritization is based only on the environmental benefit and does not consider economic costs.
The four factors considered are listed here in order of descending importance:

The factors considered for ranking are:
1. Type of ODS
2. Condition of equipment
3. Refrigeration Charge
4. Age of Equipment

For each of the factors certain points are allocated. A high number of points results in a high priority.
The ranking system works as follows:

1. Type of ODS
   if "ODS I" or "unknown" then the record is considered for the ranking system,
   if ODS II or non-ODS the record is out of consideration.

2. Condition of equipment

out of service:	0 points (no direct statement about condition)
good:	0 points
fair:	20 points
poor:	50 points
not operational:	50 points

3. Refrigeration charge (x)

0 kg < x ≤ 1 kg:	0 points
1 kg < x ≤ 3 kg:	10 points
3 kg < x ≤ 10 kg:	15 points
10 kg < x ≤ 30 kg:	20 points
x > 30 kg:	25 points
x unknown:	20 points

4. Age of equipment; Year of construction (y)
   - $y \leq 1984$: 20 points
   - $1984 < y \leq 1994$: 10 points
   - y unknown: 10 points

A high number of points results in a high priority. The points are allocated automatically by the database. They are then added, enabling prioritization of projects.

The survey identified at BSB DPW owned facilities:
16 units containing ODS I

A prioritized list of ODS I equipment, along with replacement cost estimates is provided in tables 6.4 and 6.5. The cost estimates were developed using information from vendors with current GSA contracts.

For each piece of equipment two prices are given.

Minimum cost – first figure - is the effort required to bring the equipment into compliance only by refilling with new, non-ODS refrigerant. A drop replacement includes the evacuation of the ODS I refrigerant, removal of the lubricant, refill with non-ODS refrigerant and the associated lubricant.

Maximum cost – second figure - is the effort to bring the equipment into compliance by replacing the unit. The replacement effort covers the compressor, condenser and refrigerant. Costs for the cooling chamber itself (e.g. thermal insulation for a walk-in refrigerator) are not covered by this figure.

The final price for an upgrade will be between these two figures. The decision whether to provide a drop in replacement or a full equipment replacement has to be made for each piece of equipment individually by the BSB DPW.

6.1.3 Equipment with an ODS I content of 1 kg or more

The survey was limited to equipment containing more than 1 kg of ODS. The pertinent equipment is shown in table 6.4. Ranking and costs have been developed in accordance with chapter 6.1.2 of this report.

6.1.4 Equipment with an ODS I content of less than 1 kg

Equipment containing less than 1 kg of ODS was excluded from the survey scope. However, numerous < 1 kg units were identified and incorporated in the database. The pertinent equipment is shown in table 6.5. Ranking and costs have been developed in accordance with chapter 6.1.2 of this report.

6.2 ODS Alternatives

6.2.1 EPA SNAP

Army policy states that you must have an EPA SNAP approval before you can use an ODS alternative.

EPA SNAP approved alternatives:

- ODS I:
  R22, R134A, R407C, R401A and R401B for Air Conditioning and Refrigeration
R402A, R402B and R404A for Refrigeration

- ODS II:
R407C for Air Conditioning and Refrigeration
R134A for Household and Light Commercial Air Conditioning.

More information can be taken from http://www.epa.gov/ozone/snap.

6.2.2 Army Surgeon General

As of August 2003, the alternative refrigerants R407C, R134A, R401A, R401B, R402A and R404A have received toxicity clearance from the Army Surgeon General for the following uses: facilities air-conditioning and refrigeration, refrigeration systems and commercial refrigeration.

6.2.3 German Federal Environmental Agency

In Germany, ODS alternatives must be published by the Federal Environmental Agency.

The German Federal Environmental Agency (Umweltbundesamt) must publish an alternative refrigerant list with lower ozone-depleting potential for it to be law. The German Regulation allows R22 to still be used since there is no published alternative. However R12 and R502 are prohibited since there are published alternatives.

- **R12:** Alternative refrigerants for R12 were published on 21 December 1995. A grace period of 30 months was given for substituting the alternative refrigerants R134a or R22. Thus, since 21 June 1998, servicing ("topping off") equipment with R12 is no longer allowed. This includes virgin and recycled material. Hermetically sealed, plug-in units in operation before 1 January 1995 which contain less than 1 Kg of R12 are excluded. They may be operated until final decommissioning but not refilled.

- **R502:** Substitutes for R502 were published on 23 April 1999. Instead of R502, the refrigerants R404a, R407a, R407b, R507, a mixture of R32/R125/R143a, or any other refrigerant with a lower ozone depleting potential than R502 may be used. No grace period was stated. Therefore, since 23 April 1999, servicing equipment with R502 is not allowed. This includes virgin and recycled material. Compact, prefabricated heat pumps with an output of less than 25 KW are exempt. They may be operated until decommissioning but not refilled.

- **R22:** Substitutes for R22 have not yet been published. According to German law, therefore, cooling units produced and brought into operation before 1 January 2000 may be used and refilled with R22 until decommissioning, if they can guarantee no chemical substances will be released to the atmosphere.

6.2.4 Alternatives found at the 411th BSB

The updated survey showed that:

Several ODS I alternatives were found within the 411th BSB. The most common alternatives are R407C and R134A, which have EPA SNAP, Army Surgeon General and German Federal Environmental Agency approval.
Halon systems at the 411th BSB have been replaced with a variety of alternatives. Ansul systems have replaced many of the halon systems in the kitchens.

6.3 Further Investigation - Testing of ODS-unknown equipment

Within the 411th BSB Heidelberg Army Facilities, all refrigerants in refrigeration and air conditioning systems were identified.

In the case of unknown refrigerants the following procedures are used:

- The common procedure is to evacuate (drop-out) the refrigerant and to refill (drop-in) the piece of equipment with an alternative standard refrigerant. Standardized drop in fluids exist for a/c units, refrigeration and freezer units. Note: If ODS I were to have been found in the equipment, it would have been to replaced in any case.

- Identification of the refrigerant by means of a physical test is also possible. This analysis has to be performed in a chemical testing laboratory with that related expense. This is obviously the less attractive option.

The following information is also included in this chapter:

- 6.4 Table ODS I Project Estimate; ODS content ≥ 1 kg
- 6.5 Table ODS I Project Estimate; ODS content < 1 kg

6.4 Table: ODS I Project Estimate; ODS content ≥ 1 kg

(only BSB DPW, w/o AAFES, DECA, DoDDS, Medical, MWR)

ODS ID No	Rank	ARLOC	Installation	Bldg	Location	Equipment	Manufac-turer	Model / Serial No.	Condition	Recommen-dation	Charge	Refri-gerant	Max Cost	Min Cost
142	1	GE658	Patton Barracks	107	Exterior	Walk-in refrigerator	Copeland	DLLB-301-EWL / 343425	Out of Service	Upgrade	5	R 12	€4,000	€700
121	2	GE658	Patton Barracks	141	Exterior North	Walk-in freezer	L 'Unite Hermetique	TAH4518AHP / unknown	Not Operational	Upgrade	3	R 12	€5,000	€700
64	3	GE12F	Campbell Barracks	31 S	Exterior South	A/C-Split-Unit	Carrier	Unknown	Not Operational	Replace	2	R 12	€5,000	€600
57	4	GE12F	Campbell Barracks	22	Exterior South	A/C-Unit	Trane	Unknown	Poor	Upgrade	5	ass. R 12	€7,000	€800
150	5	GE654	Patrick Henry Vilage	4507	kitchen	2-Door-Refrigerator	TRUE	T-49 / 836372	Fair	Upgrade	1.2	R 12	€8,000	€700
151	6	GE654	Patrick Henry Vilage	4507	Exterior	Walk-in refrigerator	Unknown	Unknown	Fair	Upgrade	3	ass. R 12	€4,000	€700
308	7	GE846	Tompkins Barracks	4243	Exterior	Walk-in freezer	Copeland	CRAI-0150-TFD-273 / 99D64696H	Fair	Upgrade	3.5	R 502	€5,000	€700
309	8	GE846	Tompkins Barracks	4243	kitchen	6-Doo-Refrigerator	Jordon	SKT74SSA / S6140892E	Fair	Upgrade	3.3	R 12	€11,000	€800
312	9	GE846	Tompkins Barracks	4391	Exterior	Walk-in cooler	Tecumseh	AH2512KM / 8GS725942	Fair	Upgrade	4	R 12	€4,000	€700
26	10	GE12F	Campbell Barracks	1	dining room	Milk cooler	Silver King	SK3TMPNSF / 294545X	Fair	Upgrade	2	R 12	€4,000	€600
53	11	GE12F	Campbell Barracks	13	Exterior North West	A/C-Split-Unit	Unknown	Unknown	Fair	Upgrade	2.5	ass. R 12	€5,000	€600
54	12	GE12F	Campbell Barracks	13	Exterior North West	A/C-Split-Unit	Unknown	Unknown	Fair	Upgrade	2.5	ass. R 12	€5,000	€600
273	13	GE34G	Heidelberg Hospital	3608	kitchen	2-Door-Refrigerator	Norlake	NR255 / 93300739	Good	Upgrade	1	R 12	€8,000	€700
275	14	GE34G	Heidelberg Hospital	3608	Exterior South	Walk-in freezer	Norlake	CLT28-1A3 / 9321864	Good	Upgrade	6	R 502	€5,000	€700

6.5 Table: ODS I Project Estimate; ODS content < 1 kg

(only BSB DPW, w/o AAFES, DECA, DoDDS, Medical, MWR)

ODS ID No	Rank	ARLOC	Installation	Bldg	Location	Equipment	Manufac-turer	Model / Serial No.	Condition	Recommen-dation	Charge	Refri-gerant	Max Cost	Min Cost
274	1	GE34G	Heidelberg Hospital	3608	Bar	Cooler for drinks	Perlick	7264-230 / 64-85-E	Fair	Replace	0.5	R 12	€4,000	€600
152	2	GE654	Patrick Henry Village	4507	kitchen Pub	4-Door-Refrigerator	Mc Call	1045 / M-35008	Fair	Replace	0.75	R 12	€10,000	€800

7.0 RESOURCES

"All CFC refrigerants in serviced equipment must be recovered before the equipment is retired. It is needed for the continued operation of CFC equipment on your installation. If in excess to your requirements, it is needed by the Army ODS Reserve."
ACSIM Memorandum 3 July 1997

"There is no compelling need for Army installations to eliminate all ODS Is by the end of FY03. Instead, Installation Commanders must eliminate their dependency on the commercial availability of Class 1 ODSs by end of FY03…Army Environmental Program Requirements Policy and Guidance, projects or activities which in replacement of Class 1 ODSs, such as stationary Halon fire suppression system and facility refrigeration and chiller equipment, are not considered to be eligible for environmental funding. These activities are funded from the appropriate account of the installation's budget, but not the environmental account"
ACSIM ODEP ODS Policy Memorandum 7 January 2003

"Overseas installations must comply with applicable Final Governing Standards and any applicable international treaty obligations."
ACSIM ODEP ODS Policy Memorandum 25 November 2002

In order to meet the BSB goal of phasing out ODS I and eliminating dependency on commercial availability by end of 2003, all equipment identified in Table 3.6 has been evaluated for planning and budgeting purposes.

The ODS Elimination Team has four different sources of funding potentially available for ODS replacement projects. Each source has been evaluated for applicability to the equipment identified in the inventory. These sources and the extent to which the BSB plans on utilizing them for execution of the ODS projects are described below.

It has been concluded that currently the most likely funding source is SRM funds since environmental funding is not available at this time.

Funding sources are:

7.1 Installation Sustainment, Restoration and Modernization (SRM) O&M Funds

SRM funds are used for maintenance and repair activities necessary to keep facilities in good working order. This includes regularly scheduled maintenance as well as anticipated major repairs or replacement of components that occur periodically over the expected service life of the facilities. As shown in Chapter 3, some of the refrigerator equipment containing ODS I at the BSB may be at or nearing the end of its useful service life. This obsolete equipment may only be minimally serviced and can be replaced as it breaks down. It will not be refilled with ODS I.

7.2 Special Program Funds

Special program funds are available in the areas of energy efficiency. Energy savings projects are most applicable to large equipment such as building chillers, which have significantly improved energy efficiency in recent years. No ODS I-containing equipment, for which significant efficiency improvements have been made, was identified during the field survey; however, the ODS Elimination Team will actively pursue any special program funds that may become applicable.

7.3 Installation Environmental OMA Funds

These funds, managed through the Army Environmental Program Requirements (EPR) process, are made available to ensure compliance with environmental regulations. In the past, environmental funds were available for retrofitting or upgrading equipment containing ODS with/to non-ODS only if it was out of compliance with the requirements of the FGS (leaking); this is no longer the case. "However, except for singular instances defined in the EPR WEBGUIDE, environmental funding is not available for Class I ODS elimination projects, but they shall be entered in the EPR for the purpose of identifying and tracking ODS use elimination projects on Army installations."

For detailed information see Chapter 46 of the EURO EPR WEBGUIDE FY 03.

7.4 Unit Specific Funds

Unit funding is unlikely since no operationally oriented projects have been identified; however, the ODS Elimination Team will actively pursue any unit specific funds that may become available and are applicable.

ACRONYMS

AAFES	Army/Air Force Exchange Service
ACSIM	Assistant Chief of Staff for Installation Management
AFN	Armed Forces Network
AG	Adjutant General
AIC	Army Installation Coordinator
APG	Aberdeen Proving Grounds
ASA	Assistant Secretary of the Army
ASG	Area Support Group
BSB	Base Support Battalion
BOS	Base Operation Services
CAS	Chemical Abstract Society
CFCs	Chlorofluorocarbons
CFR	Code of Federal Regulations
DSCR	Defense Supply Center Richmond
DDDE	Defense Distribution Depot Europe
DDRV	Defense Depot Richmond Virginia
DECA	Defense Commissary Agency
DLA	Defense Logistics Agency
DoD	Department of Defense
DoDAAC	DoD Activity Address Code
DoDDS	Department of Defense Dependent Schools
DPW	Directorate of Public Works
DRMO	Defense Reutilization Marketing Office
DRMS	Defense Reutilization and Marketing Service
DSCR	Defense Supply Center Richmond
EPA	Environmental Protection Agency
EPR	Environmental Program Requirements
ESDP	Established Standard and Deadline Passed
FISC	Fleet Industrial Supply Center
FSC	Federal Supply Classes
FCKW	Fluorchlorkohlenwasserstoffe (German word for CFC)
FGS	Final Governing Standards
GFE	Government Furnished Equipment
GSA	General Services Agency
HCFCs	Hydrochlorofluorocarbons
IL&E	Installations, Logistics and Environment
IMDC	International Maritime Dangerous Goods Code
MACOM	Major Command
MDEP VENC	Management Decision Package Highly Visible Environmental Compliance
MEDCOM	Medical Command
MI	Military Intelligence
MILSTRIP	Military Standards Requisitioning and Issue Procedures

MIPR	Military Interdepartmental Purchase Request
MWR	Morale Welfare Recreation
NAF	Non Appropriated Fund
NATO SOFA SA	NATO Status of Forces Agreement Supplementary Agreement
NSN	National Stock Number
OCONUS	Outside the Continental United States
ODS	Ozone Depleting Substances
ODP	Ozone Depleting Potential
O&M	Operation and Maintenance
OMA	Operation and Maintenance Account
PBO	Property Book Officer
POC	Point of Contact
RM	Resource Management
RPMA	Real Property Maintenance Account
SES	Senior Executive Service
SNAP	Significant New Alternatives Policy (EPA)
SOFA	Status of Forces Agreement
SRM	Sustainment, Restoration and Maintenance
TMC	Total Maintenance Contract
USAREUR	U.S. Army Europe

APPENDICES

A) TURN IN PROCEDURES

B) SURVEY RESULTS FOR DPW FACILITIES

C) SURVEY RESULTS FOR AAFES FACILITIES

D) SURVEY RESULTS FOR DECA FACILITIES

E) SURVEY RESULTS FOR DODDS FACILITIES

F) SURVEY RESULTS FOR MWR FACILITIES

G) SURVEY RESULTS FOR MEDICAL FACILITIES

H) FIELD FORMS

I) INSTALLATION MAPS OF THE 411TH BSB

J) DATABASE ON CD ROM